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MERCHANT & GOULD (MICROSOFT)			EXAMINER	
P.O. BOX 2903			FEARER, MARK D	
MINNEAPOLIS, MN 55402-0903				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/693,362	Applicant(s) SHAH, ASHISH	
	Examiner Mark D. Fearer	Art Unit 2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :5/31/05, 2/6/06, 4/25/06, 7/10/06, 12/11/06.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements submitted on 31May2005, 06February2006, 25April2006, 10July2006, and 11December2006 have been considered by the Examiner and made of record in the application file.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 4, 12, 15, 20 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims contain wording that offers choices, i.e., "Property of an Item, Extension, or Relationship" and "e.g., WinFS" and "e.g., change units".

Claim Rejections - 35 USC § 102

Claims 1, 3-4, 6-9, 12, 14-15, 17-19, 20, 22-23 and 25-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Narayanan et al. (US 20040193952 A1).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The applied reference has a common assignee with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Consider claims 1, 12 and 20. Narayanan et al. discloses a method for synchronizing multiple instances of a storage platform for a hardware/software interface systems (e.g., WinFS), said method comprising: dividing said storage platform into basic units of granularity (e.g., change units) ("A change unit, in contrast to a consistency unit, is the granularity of data at which conflict detection and resolution is applied, and therefore, the granularity at which "change history" is maintained. In most state-based replication systems the change unit is fixed to one granularity or to one of a small set of granularity options, such as a physical row or column.") paragraph 0006); sequentially enumerating changes and tracking said changes on a per change unit basis ("In furtherance thereof, the source replica 104 in association with an application, the source 100 receives one or more updates. Associated with each piece of replica data at the source 100 and destination 102 is metadata. Each change results in a

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metadata update to both a change unit and its associated consistency unit. The metadata of the changed data of the source replica 104 is utilized to generate a consistency unit 105 of metadata of the changed data. As indicated hereinabove, the consistency unit 105 may be a single change unit. However, in accordance with a novel aspect of the present invention, the consistency unit 105 contains one or more change units, the consistency unit 105 including all of the semantically related changed data records of the source replica 104.”) paragraph 0048); for each instance, tracking the state of changes for that instances (“Referring now to FIG. 4, there is illustrated a sample schema of the present invention. Realignment of logical records requires the change tracking mechanism to update the metadata such that the realignment is propagated to the destination replicas in a manner that preserves the semantics of the logical record.”) paragraph 0066), as well as the state of changes for a plurality of other known instances in the sync community (sync partners) (“At some point in time, it is desired to reconcile or "synchronize" the source 100 and the destination 102 such that the source replica 104 transmits all of the changes to the destination replica 106. In a peer-to-peer environment, those changes received at the destination 102 may then be propagated from either the destination 102 to other remote data collections requesting synchronization, or directly from the source 100.”) paragraph 0047); and for synchronization, identifying new changes by comparing the enumerated changes for a particular instance with the state of changes for that instance (“Flow begins at 200 where a change occurs on the source replica. Each change results in a metadata update to both the change unit and the associated consistency unit. When data

changes occurs in a user database, the change tracking mechanism in the user database will keep track of replication metadata that then allows these changes to be synchronized with other replicas at a later point in time. At 202, the destination then requests synchronization. In response thereto, and for each updated change unit, the source enumerates an updated consistency unit, as indicated at 204. At 206, the source enumerates all updated change units within the consistency unit and bundle them. The source then sends the bundled change unit(s) for the given consistency unit to the destination, as indicated at 208.") paragraph 0054).

Consider claims 3, 14 and 22, and as applied to claims 1, 12 and 20, respectively. Narayanan et al. discloses a method wherein a change unit is a Property ("Referring now to FIG. 5, there is illustrated sample data for the example of FIG. 4. The data set includes customer, order, and order details for a customer named "Alfred" (where 'name' is read as 'property'). The top-level table 500 represents the row data for the Customer1 "Alfred" and contains the CustomerID column with the name "Alfred". The customer "Alfred" has three orders associated therewith: a first order table (Order_1) 502 representing the row data for Order_1, a second order table (Order_2) 504 representing the row data for Order_2, and a third order table (Order_3) 506 representing the row data for Order_3.") paragraph 0068 ("... the association of related objects may be through a common key value; e.g., the value of a "consistencyUnitKey" directory attribute (where the name 'consistencyUnitKey' is read as 'property'). Replication metadata might be stored along with one of the objects or in a private table used only by the directory replication system.") paragraph 0014).

Consider claims 4, 15 and 23, and as applied to claims 1, 12 and 20, respectively. Narayanan et al. discloses a method wherein a change unit is an individual Property of an Item, Extension, or Relationship (but not a Property of a Nested Element in said Item, Extension, or Relationship) ("Referring now to FIG. 6, there is illustrated another approach to application-defined replication that separates consistency unit change tracking information into a separate table 600. As before, each change unit is associated with exactly one consistency unit. This association may be explicit (each change unit might be tagged with a key that uniquely identifies the consistency unit of which it is a member) or implicit (as in logical record links, where the relationship might be identified by Customers.CustomerID=Orders.CustomerID). Any row of any table containing application data can thereby be associated with any consistency unit.") paragraph 0110).

Consider claims 6, 17 and 25, and as applied to claims 1, 12 and 20, respectively. Narayanan et al. discloses a method wherein changes to a replica are uniquely enumerated based on a unique replica identification, and wherein said changes are enumerated for said replica ("In operation, the destination 102 periodically requests synchronization with the source 100, facilitating synchronization of the destination replica 106 with the source replica 104. When the source 100 receives the synchronization request, the source 100 enumerates an updated consistency unit 105 (first represented herein as containing changes of the source replica 104). The source 100 then enumerates all updated change units of the consistency unit 105, and bundles change units for the given consistency unit 105 for transmission to the destination 102.

The destination 102 includes a destination change identification component 108 that receives and identifies the updated information. The destination 102 also includes a destination reconciliation component 110 that receives the enumerated changes from the change identification component 108, detects and resolve conflicts, and then converges the changed data to the destination replica 106. The changed data is passed as the consistency unit 105 to the destination 102 and propagated to the destination replica 106 in a single transaction.”) paragraph 0049).

Consider claims 7, 18 and 26, and as applied to claims 1, 12 and 20, respectively. Narayanan et al. discloses a method wherein changes are enumerated at a change unit level (“In operation, the source 100 periodically requests synchronization with the destination 102, facilitating synchronization of the source replica 104 with the destination replica 106. When the destination 102 receives the synchronization request from the source 100, the destination 102 enumerates an updated consistency unit of destination change units (also represented by the consistency unit 105, but contains changes of the destination replica 106 and is passed in the opposite direction), enumerates all updated change units of the consistency unit 105, and bundles the change units for the given consistency unit for transmission to the source 100.”) paragraph 0051).

Consider claims 8, 19 and 27, and as applied to claims 1, 12 and 20, respectively. Narayanan et al. discloses a method wherein conflicts are detected and resolved at a change unit level (“Conflict detection and resolution is performed, which is the phase of the synchronization process where the replication metadata is compared

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from the source and destination replicas involved in synchronization, and any conflicts are detected and resolved. At 210, the destination applies the bundled change units in a single transaction, including updating the metadata of the consistency unit. This phase of the synchronization process occurs where the changes from the source replica are propagated to the destination replica after conflict detection and resolution have been performed. At 212, a check is performed to determine if further updates are to be made. If YES, flow is back to the input of 204 to address the next change unit.”) paragraph 0054).

Consider claim 9, and as applied to claim 1 above. Narayanan et al. discloses a method wherein instances maintain a synchronization mapping of their known sync partners with which to synchronize in a sync community (“Referring now to FIG. 4, there is illustrated a sample schema of the present invention. Realignment of logical records requires the change tracking mechanism to update the metadata such that the realignment is propagated to the destination replicas in a manner that preserves the semantics of the logical record. In the example of FIG. 4, there is provided a Customers table 400 for a Customers row that is uniquely identified with a CustomerID column. The Customers table 400 also includes three columns labeled a FirstName, LastName and Address. An Orders table 402 is uniquely identified with an OrderID column. The Orders table 402 also includes three columns, a first labeled as CustomerID for mapping to the parent Customers table 100, a second column labeled EmployeeID and a last column entitled OrderDate. A third table, an OrderDetails table 404 is uniquely identified with an OrderDetailID column. The OrderDetails table 404 includes four columns: a first labeled

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as OrderID for mapping to the parent Orders table 402; a second column labeled ProductID, a third entitled UnitPrice, and a last column entitled Quantity.”) paragraph 0066).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2, 5, 10-11, 13, 16, 21 and 24 are rejected under 35 U.S.C. 103(a) as being obvious over Narayanan et al. (US 20040193952 A1) in view of Wu et al. (US 7216133 B2).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome

by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Consider claims 2, 13 and 21, and as applied to claims 1, 12 and 20, respectively. Narayanan et al. discloses a method comprising data elements as change units. However, Narayanan et al. fails to disclose a change unit as an item. Wu et al. discloses a change unit as an item ("Data at a replica is generally divided into discrete groupings of data often referred to as "items."") column 1 lines 59-60).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate change units as an items as taught by Wu et al. with as taught by Narayanan et al. for the purpose of defining data attributes.

Consider claims 5, 16 and 24, and as applied to claims 1, 12 and 20, respectively. Narayanan et al. discloses a method comprising data elements as change

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units. However, Narayanan et al. fails to disclose a method wherein multiple instances of a storage platform comprise a multi-master sync community. Wu et al. discloses systems that can be grouped into a topology wherein the systems can be synchronized together ((“The principles of the present invention also provide for a computer system synchronizing data with other computer systems in a topology. The computer system includes a data store layer that includes a number of items and a local change tracker that maintains local change enumerations for the number of items. The computer system further includes a synchronization layer that includes a logical view substantially similar to logical views at one or more other computer systems in the topology. The logical view representing a mapping of one or more items from the number of items. The synchronization layer further including a synchronization change tracker that maintains versions and synchronization local change enumerations for the one or more items mapped to the logical view. The principles of the present invention also provide for generating a mapping of the physical layout of items in a data store to a logical view. A computer system accesses core code that can be used to facilitate compilation of logical schemas. The computer system accesses a logical schema that includes definitions of a change unit and a consistency unit. A change unit is configurable such that a developer can allocate the size of a change unit based on available resources. For example, on low bandwidth or high latency network connections lower granularity, resulting in smaller items and less data on the network can be used. A consistency unit is also configurable such that the developer can group items together that should be synchronized together. For example, a developer may group the items that make up an

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address together, as a change to any of these items can result in a change to all of them.") column 3 lines 38-67).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate systems that can be grouped into a topology wherein the systems can be synchronized together as taught by Wu et al. with a method comprising data elements as change units as taught by Narayanan et al. for the purpose of allowing different replicas to make changes independently.

Consider claim 10, and as applied to claim 9 above. Narayanan et al. discloses a method wherein instances maintain a synchronization mapping of their known sync partners. However, Narayanan et al. fails to disclose a method wherein an instance may have multiple mappings in order to enable different synchronization behaviors with different sync partners in the same sync community. Wu et al. discloses a method of synchronization wherein there can be mappings to more than one logical view in a topology ("The principles of the present invention also provide for a computer system synchronizing data with other computer systems in a topology. The computer system includes a data store layer that includes a number of items and a local change tracker that maintains local change enumerations for the number of items. The computer system further includes a synchronization layer that includes a logical view substantially similar to logical views at one or more other computer systems in the topology. The logical view representing a mapping of one or more items from the number of items. The synchronization layer further including a synchronization change tracker that

maintains versions and synchronization local change enumerations for the one or more items mapped to the logical view.”) column 3 lines 38-51).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a method of synchronization wherein there can be mappings to more than one logical view in a topology as taught by Wu et al. with a method wherein instances maintain a synchronization mapping of their known sync partners as taught by Narayanan et al. for the purpose of synchronizing data with other computer systems in a topology.

Consider claim 11, and as applied to claim 9 above. Narayanan et al. discloses a method wherein instances maintain a synchronization mapping of their known sync partners. However, Narayanan et al. fails to disclose a method wherein mapping comprises, for at least one sync partner, a community identification and a mapping identification for said sync partner, in order to synchronize with said sync partner without information pertaining to a location for said sync partner. Wu et al. discloses a synchronization change tracker that includes replica IDs (“A synchronization change tracker at the synchronization layer of the replica maintains versions and synchronization local change enumerations associated with the items mapped to the logical views. For example, table 307 can be located at synchronization layer 128. The versions in a synchronization change tracker may include replica IDs that identify the replica that made changes to items associated with the corresponding version. The version may also include replica change enumerations identifying a chronological order that changes were made on the replicas. In FIG. 3A, to item I1 (in column 306) is

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associated with the version A4 where A is the replica ID (e.g., identifying replica 102) and 4 is the replica change enumeration. Thus a change to item I1 was made at a replica 102 in a chronological order 4. The replica ID, in some embodiments of the invention, identifies a replica other than the replica that made the change. In these embodiments, a replica will be used to assign versions to changes made by several different replicas within the topology. This may be referred to as surrogate authoring.”) column 10 lines 22-40).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a synchronization change tracker that includes replica IDs as taught by Wu et al. with a method wherein instances maintain a synchronization mapping of their known sync partners as taught by Narayanan et al. for the purpose of maintaining versions and synchronization local change enumerations associated with items mapped to logical views.

Conclusion

Any response to this Office Action should be faxed to (571) 273-8300 or mailed to:

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Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Mark Fearer whose telephone number is (571) 270-1770. The Examiner can normally be reached on Monday-Thursday from 7:30am to 5:00pm.


If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 571-272-4100.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

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Mark Fearer
M.D.F./mdf
June 12, 2007



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